

Composition operators on spaces of analytic functions

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When φ is an analytic self-map of a domain Ω in the complex plane \mathbb{C} , the composition operator C_φ is defined by $C_\varphi(f) = f \circ \varphi$, for f analytic in Ω . It is of interest to study composition operators as they act on various Banach or Hilbert spaces of analytic functions on Ω . A driving principle of this study is to see operator-theoretic properties of C_φ reflected in analytic or geometric properties of φ . In this talk we will see some examples of this underlying philosophy in action as we consider two questions: When is the operator C_φ compact, and when is a difference $C_\varphi - C_\psi$ of two composition operators compact? We will examine this pair of questions on several different Banach spaces of analytic functions on $\Omega = \mathbb{D}$, the unit disk in \mathbb{C} .